

REMARKS

In response to the action applicants have amended claims 1, 4 and 18, and submitted Declaration of Mr. Russel Hirai. Applicants respectfully request reconsideration in view of the amendment and the following remarks.

Applicants have amended the claims 1 and 18 to further clarify that Applicants do not intend to cover imidazole. Specifically, claims 1 and 18 now include the organic structures of imine and hydrazine derivatives from paragraphs 13 and 14, respectively. In addition, claim 4 no longer includes imidazole. Applicants respectfully submit that the amendments and newly submitted claims enter no new matter.

In response to the restriction requirement, Applicants have withdrawn claims 13 to 19 from consideration. Because the withdrawn claims include restrictions at least as narrow as claim 1, however, Applicants respectfully submit that the withdrawn claims do not require an additional search for examination. Furthermore, because they all incorporate a scope narrower than claim 1, allowance of the claims would be proper under MPEP § 809.02 and § 821.04.

The action continues to reject claims 1 to 4 and 11 for obviousness over US. Pat. Pub. No. 2005/0031789 ('789 to Liu et al.)—the action appears to rely upon the '789 publication representing a reference under 35 U.S.C. § 102(e). Applicants respectfully submit that these rejections become moot in view of the earlier-filed terminal disclaimer and have also submitted the Declaration of Russell Hirai to confirm that the applications had common ownership at the time of invention. Applicants respectfully submit that the remaining obviousness rejections become moot in view of the newly submitted Declaration of Russell Hirai.

The action rejects claims 1 to 3 as being obvious under 35 U.S.C. § 103(a) in view of EP 1229093 ('093). The '093 patent does not disclose the use of an imine derivative or hydrazine derivative for facilitating barrier removal. Specifically EP '093 discloses hydrogen peroxide, an abrasive, an organic ammonium salt and imidazole. As noted in the Declaration of Dr. Bian dated February 16, 2006, imidazole (N-C-N structure) is not a hydrazine derivative, because it lacks a double nitrogen (N-N) structure. Thus, since the '093 patent does not disclose the use of an imine derivative or hydrazine derivative for facilitating barrier removal and imidazole per se is different than the claimed hydrazine derivatives, Applicants respectfully submit that EP '093 does not disclose or suggest the claimed invention.

The action provisionally rejects claims 1 to 4 and 11 for obviousness-type double patenting in view of claims 1 to 7 of US. Pat. Pub. No. 2005/0236601 ('601 to Liu et al.). Since claims 1 to 7 lack either guanidine, hydrazine or their derivatives for use in polishing barrier materials, Applicants respectfully submit that the pending claims are patentably distinct in view of '601 to Liu et al.

The action provisionally rejects claims 1 to 4 and 11 for obviousness-type double patenting in view of claims 1 to 8 of US. Pat. Pub. No. 2005/0070211 ('211 to Liu et al.) in view of Liu et al. '789. Since claims 1 to 8 lack the quaternary ammonium salt for use in polishing barrier materials, Applicants respectfully submit that the pending claims are patentably distinct in view of '211 to Liu et al. The USPTO applies the obviousness-type double patenting to restrict multiple patents claiming different subject matter to form the provisional rejection. Applicants respectfully submit that the combining of the references appears to represent a recognition that the claimed invention is patentably distinct. In view of

the above, Applicants respectfully request withdrawal of the provisional double patenting rejection.

The action rejects claims 1 to 4 and 11 as being obvious under 35 U.S.C. § 103(a) in view of Wang et al. (US Pat. Pub. No. 2003/0170991). Wang et al. disclose the use of guanidine nitrate in Table 3 for copper removal slurries. These slurries have high copper to tantalum selectivity—the opposite of the claimed invention. In addition, Wang et al. in paragraphs 26 to 27 disclose quaternary ammonium salts for use as preferred stopping compounds. Wang et al. do not disclose or suggest a quaternary ammonium compound where R<sub>1</sub> is a substituted or unsubstituted aryl, alkyl, aralkyl, or alkaryl group and R<sub>1</sub> has a carbon chain length of 2 to 10 carbon atoms. Furthermore, Wang et al. do not disclose or suggest adding a quaternary ammonium salt to a barrier removal slurry for improved dielectric removal rate. Paragraph 26 in particular discloses that the stopping compound reduces barrier removal rate of materials such as Ta and TaN. This also teaches away from Applicants' claimed invention. Applicants respectfully submit that Wang et al. do not disclose or suggest a quaternary ammonium compound where R<sub>1</sub> is a substituted or unsubstituted aryl, alkyl, aralkyl, or alkaryl group and R<sub>1</sub> has a carbon chain length of 2 to 10 carbon atoms, do not teach adding these compounds to a barrier slurry and teach quaternary ammonium compounds in general would have a detrimental impact on barrier polishing. Applicants respectfully submit that claims 1 to 4 and 11 are not obvious in view of Wang et al.

Applicants respectfully request reconsideration of the amended claims. If a telephone call would expedite matters, then please call me at 302-283-2136.

Respectfully submitted,

June 2, 2006  
Date



Blake T. Biederman  
Attorney for Applicant(s)  
Reg. No. 34,124

Blake T. Biederman  
Patent Attorney  
1105 North Market Street  
Suite 1300  
Wilmington, DE 19899  
Tel. 302-283-2136